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Numerical Calculations of the Magnetic Susceptibility of Split Gold Nanorings JEREMY NEAL, BAHMAN TAHERI, PETER PALFFY-MUHORAY, Liquid Crystal Institute, KSU — Metamaterials consisting of split ring resonators have shown negative permeabilities at microwave frequencies. A key challenge is the realization of such a negative index material in the visible spectrum. We consider here the magnetic susceptibility of cut gold nanorings as function of frequency. We have carried out numerical calculations of the polarizability of such particles using the Discrete Dipole Approximation of Draine and Flatau. We present our results for the magnetic susceptibility of different nanoparticle geometries, and compare our results with theoretical estimates. Since the susceptibilities are strongly anisotropic, liquid crystal-like orientationally ordered assemblies of such nanostructures may be useful in realizing bulk optical NIM materials.

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